

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)RECEIVED
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| Applicant's or agent's file reference 005614-0014 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) | |
| International application No. PCT/CA 03/01004 | International filing date (day/month/year) 03.07.2003 | Priority date (day/month/year) 03.07.2002 |
| International Patent Classification (IPC) or both national classification and IPC A47J37/07 | | |
| Applicant WOODFLAME INC. et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 8 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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| Date of submission of the demand 29.01.2004 | Date of completion of this report 21.09.2004 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Novelli, B Telephone No. +49 89 2399-2864  |

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/CA 03/01004**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

2, 4-12 as originally filed
1, 1a, 3, 3a received on 20.07.2004 with letter of 20.07.2004

Claims, Numbers

1-15 received on 20.07.2004 with letter of 20.07.2004

Drawings, Sheets

1/9-9/9 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/CA 03/01004**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 1-15 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | 1-15 |
| | No: Claims | |
| Industrial applicability (IA) | Yes: Claims | 1-15 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

1) Document **WO-A-99/07267**, which has been cited and discussed by the applicant on page 1 of the description, discloses a barbecue cooking device (see page 3, lines 19-35; page 5, lines 12-24; figure 2) from which the subject-matter of independent claim 1 differs in that:

- a) the slanted side wall section of the casing has an inner surface made of a metall capable of reflecting radiant energy;
- b) the slanted side wall section of the casing extends at an angle ranging from about 135° to about 110° with respect to the base wall of the casing;
- c) a pressurized air chamber is located downstream of the blower.

Features a) and b) in combination provide for an optimisation of the reflection level of the thermal radiations by the burner toward the grill. Feature c) provides for an efficient air flow from the blower to the air chamber.

2) Although document **WO-A-01/22854**, page 8, lines 7-8 discloses slanted side wall section of the casing having an inner surface made of a metall capable of reflecting radiant energy, the combination of features a) and b) - having a synergetic effect - is neither disclosed nor suggested by the available state of the art, as well as feature c).

Consequently, independent claim 1 meets the criteria set forth in Article 33(1) PCT with respect to the available prior art, as well as claims 2-15, which are dependent on said independent claim.

- 3) The statement in the newly filed page 1a, line 5, referring to the cited state of the art **WO-A-99/07267**, contravenes to the requirements of Article 34(2)(b) PCT.
- 4) Independent claim 1 is not properly drafted in the two-part form with regard to the features disclosed in the nearest prior art **WO-A-99/07267**.

WOOD FED BARBECUE APPARATUS

FIELD OF THE INVENTION

The present invention relates generally to the field of cooking devices. More particularly, it concerns a portable wood fed barbecue apparatus comprising a combustion system using wood as the main source of fuel.

BACKGROUND OF THE INVENTION

With the ever increasing cost of oil products and the threat of supply shortages, interest in alternate forms of heating has increased in recent years. Wood being a renewable resource is a popular alternative and as a result a preponderance of wood burning stoves has emerged.

Barbecue apparatuses comprising a burner using wood as the main source of fuel are already known in the prior art. Such barbecue apparatuses typically comprise a casing having an open top for supporting a cooking grill and a burner located in the casing under the cooking grill. The burner, which is tubular, comprises a combustion chamber located over an air chamber, and a diffuser plate provided with air openings separating the combustion chamber from the air chamber. The air chamber has a forced-air intake operatively connected to a ventilation system that provides forced-air to the air chamber. In operation, pieces of wood are placed in the combustion chamber on the diffuser plate and light. The fan is then turned on to maintain the combustion of the wood. Examples of such prior art wood fed barbecue cooking devices are found in the Applicant's prior patent applications WO9908048 and WO9907267 and in US patents Nos 4,924,847 and 4,747,781.

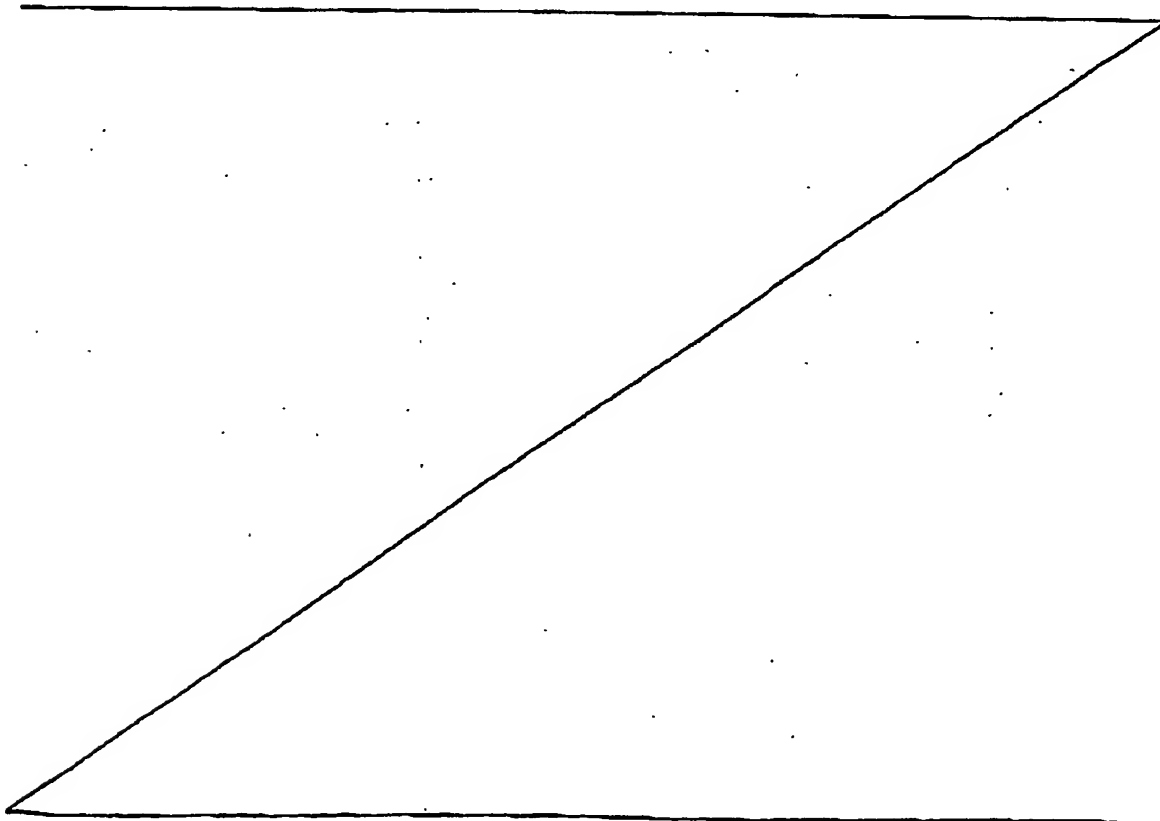
WO 99/07267 discloses a grill assembly (12) comprising a housing (30) including a cooking surface (32), sidewalls (34) skirting the cooking surface (32) and a bottom wall (36) including an inlet (38) adapted to be sealingly connected to a source of heat to prevent heat loss and to promote collection of the heat in the housing (30). This document further discloses a burner (14) mounted on a dome-shaped member (79) set on the bottom wall (17) of the container (16). The dome-shaped member (79) with the bottom wall (17) of the container (16) are defining an air-receiving chamber

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(70) devised to provide air in the combustion chamber (60) of the burner for the combustion of a fuel therein.

5 The grill assembly (12) of WO 99/07267 also comprises sidewalls (18) of the casing which are slanted at not more than 100° with respect to the base wall of the casing. Consequently, the radiation emitted from the burner can hardly be reflected upwards towards the grill.

10 Also known in the art are US patents no. US 4,924,847 and US 4,747,781 which describe a wood stove and a cooking unit in which virtually complete combustion is achieved by feeding combustion air under pressure through openings in a diffuser plate with the diameter of the openings having a calculated size and spacing therebetween. Although the problem of complete and clean combustion has been solved by such wood fed barbecue cooking devices, several drawbacks remain
15 associated with their use.



Accordingly, that object is achieved with a barbecue cooking device (1) comprising:

-an inverted frustum casing (10) of a given height (11), having a base wall (20), an open top (30) and a slanted side wall (40) section extending from the base wall (20) to the top (30) and having an inner surface (50) made of a material capable of reflecting radiant energy;

-a grill (60) mountable on the open top (30);

-a cup-shaped burner (70) with a bottom wall (72) and a side wall section (74), the burner (70) comprising:

-a combustion chamber (76) in an upper portion thereof for burning a combustible material, thereby emitting thermal energy;

-an air chamber (78) located beneath the combustion chamber (76), the air chamber (78) having an air intake (82) for receiving air; and

-a diffuser plate (79) separating the combustion chamber (76) and the air chamber (78); and

- a blower (90) operatively connected to the air intake (82) of the air chamber (78) to provide forced-air to the air chamber (78);

the barbecue cooking device (1) being characterized in that:

-the side wall section (40) of the casing (10) extends at an angle ranging from about 135 degrees to about 110 degrees with respect to the base wall (20) of the casing (10);

-the burner (70) is located inside the casing (10) with said side wall section (74) of the burner (70) spanning the height (11) of the casing (10) such that most of the thermal energy emitted by the combustion chamber (76) radiate radially towards the slanted side wall section (40) of the casing (10) where it is reflected towards the grill (60) mounted on the top of the casing (10); and

-the blower (90) is part of a ventilation system (91) that further comprises:

-a pressurized air chamber (95) located downstream of the blower (90), said pressurized air chamber (95) having an outlet end (93) distal from the blower (90); and

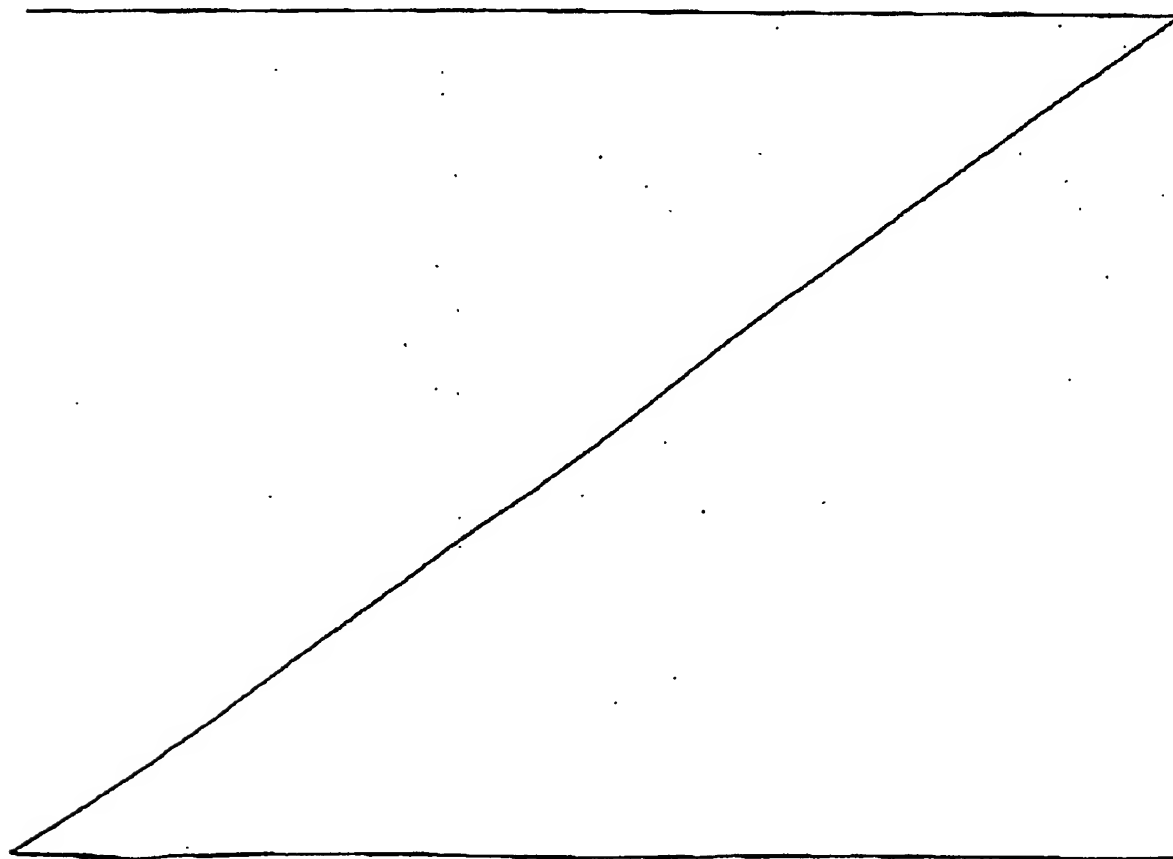
3a

-an air intake tube (98) having an open top end (99) secured to the air intake (82) of the air chamber (78); and an open bottom end (92) adapted to be connected to the outlet end (93) of the pressurized air chamber (95).

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Thanks to the configuration of the cooking device with the burner being located entirely within the casing with its side wall section spanning the height of the casing, the use of radiant energy radiating from the burner is optimized.

- 10 The inverted frustum casing may have the shape of an inverted cone or pyramid. However in accordance with a preferred embodiment it has the shape of an inverted pyramid. More preferably, the burner is generally tubular and has a round bottom wall. However, the burner may also have a generally rectangular shape with a rectangular bottom wall.



WHAT IS CLAIMED IS:

1. A barbecue cooking device (1) comprising:

5 -an inverted frustum casing (10) of a given height (11), having a base wall (20), an open top (30) and a slanted side wall (40) section extending from the base wall (20) to the top (30) and having an inner surface (50) made of a material capable of reflecting radiant energy;

-a grill (60) mountable on the open top (30);

10 -a cup-shaped burner (70) with a bottom wall (72) and a side wall section (74), the burner (70) comprising:

-a combustion chamber (76) in an upper portion thereof for burning a combustible material, thereby emitting thermal energy;

-an air chamber (78) located beneath the combustion chamber (76), the air chamber (78) having an air intake (82) for receiving air; and

15 -a diffuser plate (79) separating the combustion chamber (76) and the air chamber (78); and

- a blower (90) operatively connected to the air intake (82) of the air chamber (78) to provide forced-air to the air chamber (78); the barbecue cooking device (1) being characterized in that

20 -the side wall section (40) of the casing (10) extends at an angle ranging from about 135 degrees to about 110 degrees with respect to the base wall (20) of the casing (10);

25 -the burner (70) is located inside the casing (10) with said side wall section (74) of the burner (70) spanning the height (11) of the casing (10) such that most of the thermal energy emitted by the combustion chamber (76) radiate radially towards the slanted side wall section (40) of the casing (10) where it is reflected towards the grill (60) mounted on the top of the casing (10); and

30 -the blower (90) is part of a ventilation system (91) that further comprises:

-a pressurized air chamber (95) located downstream of the blower (90), said pressurized air chamber (95) having an outlet end (93) distal from the blower (90); and

-an air intake tube (98) having an open top end (99) secured to the air intake (82) of the air chamber (78); and an open bottom end (92) adapted to be connected to the outlet end (93) of the pressurized air chamber (95).

2. The barbecue cooking device (1) according to claim 1, characterized in that said inverted frustum casing (10) has an inverted pyramidal shape.

3. The barbecue cooking device (1) as claimed in claim 2, characterized in that the burner (70) has a generally tubular shape with a round bottom wall (72).

4. The barbecue cooking device (1) as claimed in claim 2, characterized in that the burner (70) has a generally rectangular shape with a rectangular bottom wall (72).

5. The barbecue cooking device (1) according to any one of claims 1 to 4, characterized in that the base wall (20) of the casing (10) has a given surface area and the bottom wall (72) of the burner (70) covers more than 50% of said surface area.

6. The barbecue cooking device (1) according to claim 5, characterized in that the bottom wall (72) of the burner (70) covers more than 75% of the surface area of the base wall (20).

7. The barbecue cooking device (1) according to any one of claims 1 to 6, characterized in that it comprises a heat deflecting shield (100) mountable beneath the grill (60) on top of the burner (70) for deflecting flames emitted from the burner (70).

8. The barbecue cooking device (1) according to claim 7, characterized in that the deflecting shield (100) is provided with slits (102).
9. The barbecue cooking device (1) according to claim 8, wherein the grill (60) has a given surface area and the barbecue is characterized in that the deflecting shield (100) is sized to cover substantially all of said surface area of the grill (60), for diffusing the thermal energy reflected towards the grill (60).
10. The barbecue cooking device (1) according to claim 9, characterized in that the deflecting shield (100) has a central portion (104) free of said slits (102), and a peripheral portion (106) having a series of longitudinal slits (102), the central portion (104) being located on top of the burner (70) when the shield (100) is mounted beneath the grill (60).
11. The barbecue cooking device (1) according to claim 10, wherein the grill (60) comprises a series of longitudinal slots (108), the longitudinal slits (102) of the shield (100) being in a staggered arrangement with respect to the longitudinal slots (108) of the deflecting shield (100).
12. The barbecue cooking device (1) according to any one of claim 1 to 11, characterized in that said angle is 120 degrees.
13. The barbecue cooking device (1) according to any one of claims 1 to 12, characterized in that it comprises means for cooling the slanted wall section (40).
14. The barbecue cooking device (1) according to claim 13, characterized in that the cooling means comprises an air inlet (110) located in a lower portion of the slanted wall section (40) for allowing air to enter into the casing (10) and an air outlet (120) located in an upper portion of the slanted wall section (40) for allowing air to exit the casing (10), thereby allowing a flow of air that cools the slanted wall section (40).

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15. The barbecue cooking apparatus (1) according to claim 14, characterized in that the air inlet (110) and the air outlet (120) consist of a plurality of openings provided in the slanted side wall (40).

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